



15th Global Conference on Sustainable Manufacturing

Product, service, and business model innovation: A discussion

Geissdoerfer, Martin^{a,b,*}; Vladimirova, Doroteya^b; Van Fossen, Kirsten^b; Evans, Steve^b

^a *Gonville and Caius College, University of Cambridge, Cambridge, CB2 1TA, United Kingdom*

^b *Institute for Manufacturing, Department of Engineering, University of Cambridge, Cambridge, CB3 0FS, United Kingdom*

Abstract

Business model innovation is increasingly recognised to be a central part of strategic management that generates the decisive competitive advantages for a growing number of organisations. This is particularly relevant in the areas of corporate sustainability strategy and sustainable entrepreneurship, since technological innovations in isolation yield increasingly incremental economic, social and environmental performance improvements. Despite the surge of research into business model innovation, there is still conceptual ambiguity among academics and practitioners about business model innovation. This lack of clarity not only poses issues for understanding what makes companies successful, but also for understanding how business model innovation relates to product and service development processes. To address these issues, we suggest a discussion that links sustainable business model innovation to the more established fields of product and service innovation. To start this conversation, we conducted a comprehensive literature review using structured keyword database searches and cross-reference snowballing. Based on the literature findings, we conducted two focus groups with industry representatives, resulting in the proposition of a first set of potential differentiation dimensions. The intended contribution is increased conceptual clarity for academic researchers and industrial decision makers. By improving our understanding of how business model innovation relates to product and service innovations, we can increase the effectiveness and efficiency of sustainable business model innovation research and implementation.

© 2017 The Authors. Published by Elsevier B.V.

Peer-review under responsibility of the scientific committee of the 15th Global Conference on Sustainable Manufacturing.

Keywords: Business Model Innovation, Product innovation, Service innovation, New product development, New service development, Diversification

* Corresponding author. Tel.: +44-775-698-3831
E-mail address: ml733@cam.ac.uk

1. Introduction

Because of pressing environmental issues, like climate change [1], biodiversity loss [2], and resource depletion [3], but also social problems, like extreme poverty, which is increasingly entrenched in the worst affected countries [4] or rising inequality in industrialised countries [5], [6], the transition to a more sustainable socio-economic system seems increasingly desirable..

Central to facilitating this transition and to providing the necessary resources and capabilities is the private sector [7]. For organisations that support this transition, business model innovation is an increasingly important leverage point to meet their sustainability ambitions [8] because technological innovation alone seems to yield diminishing returns [9]. However, many practitioners seem to be more familiar with product and service innovation and the business model concept remains unclear to them [10].

As a first step towards addressing this conceptual ambiguity, we suggest a discussion of the differences between product, service, and business model innovation to guide companies' diversification choices and provide a more solid basis for academic research. We want to start this discussion by proposing a first set of potential dimensions of differentiation.

This paper is structured as follows. First, in section 2, the research gap is introduced, before the research method is presented in section 3. This is followed by an illustration of the findings in section 4. The paper ends with a discussion of the results and recommendations for future research in section 5.

2. Background

The business model concept gained popularity during the dotcom boom of the 1990's, initially to communicate complex e-commerce ideas to investors [11]. Following its popularity with practitioners, academics started to investigate the notion, with an upsurge in research since the early 2000's [12]. The purpose of the business model concept has evolved to be twofold. On the one hand, the business model has become an instrument for the systemic analysis, planning, and communication of the configuration and implementation of an organisational system [13]. On the other hand, business model innovation is increasingly seen as a source for superior organisational performance and competitive advantage [14]–[16] that is complementing or even partly replacing organisational strategy [17]–[20], as illustrated in Figure.

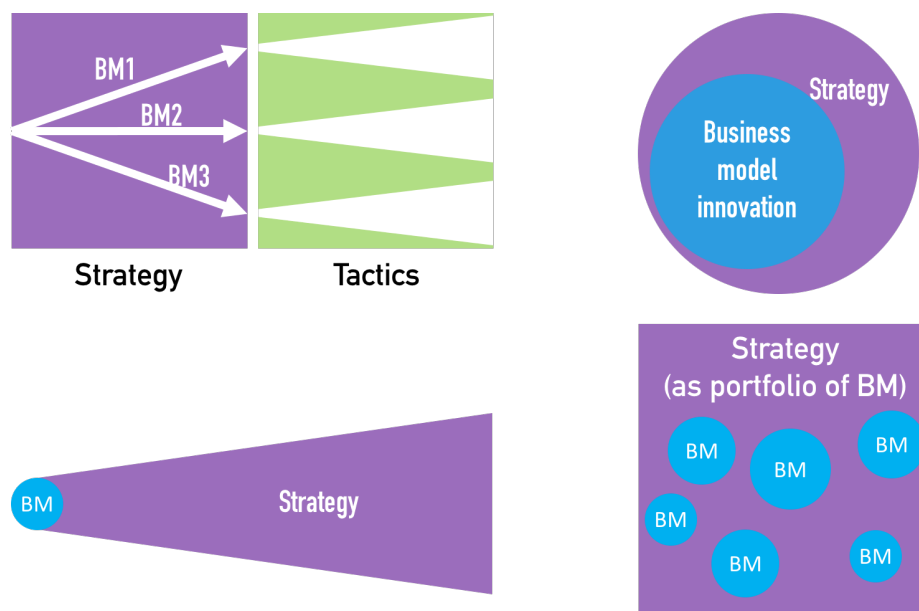


Fig. 1. The relationship between organisational strategy and business models

Business model innovation is the development of new business models, the modification of existing business models, and the change from one business model to another; and we call it sustainable business model innovation, if sustainability considerations were at least part of the motivation for the innovation [8].

The concept of sustainable business models (see e.g. [21]–[24]) integrates sustainability considerations into the business model through stakeholder management [25]–[27] and sustainable value generation [28], [29]. Sustainable business models are defined by the generation of additional, sustainable value through more pro-active collaboration with a broader range of stakeholders, and a long-term perspective [8].

Product innovation and service innovation are concepts that have been established for a considerably longer time than business model innovation [30], [31]. There is a range of definitions and reviews of both product and service innovation by different authors (e.g. [32]–[46]). Based on these definitions, this paper interprets product and service innovation as the development of new products and services, the modification of established products and services, or the substitution of one product or service with another one.

3. Research gap

We conducted a comprehensive literature review [8] and found that the difference between product innovation, service innovation, and business model innovation remains unclear.

Most authors (e.g. [16], [47]–[50]) structure the business model into several elements or dimensions, roughly following Richardson's [17] classification of value proposition, value creation (and delivery), and value capture. A business model innovation is defined as an innovation in one or more of the elements [17]. However, in this definition most product or service innovations would have an overlapping definition with business model innovation. For example, if the value proposition is innovated by a new product or service, it is often not obvious whether this is only a product or also a business model innovation. This issue persists for definitions that require two or more elements to be innovated (e.g. [16]). Also, if all elements would have to change, most business model innovations would not qualify as such.

A similar but somewhat different approach is followed in a working paper by Aversa and Haeflinger [51], who tries to avoid the overlap between product, respectively horizontal diversification, and business model diversification by attributing changes in the value proposition to the former and changes in value capture and creation to the latter. Beside the still existing overlap between vertical diversification of the value chain and business model diversification in the value creation activities, most product and service diversification process will not occur in isolation but influence the rest of the business model.

Consequently, conceptual boundaries seem unclear in the literature and there is conceptual ambiguity over dimensions of differentiation between product, service, and business model innovation and the approximate thresholds that define which innovation and diversification is comprehensive enough to constitute a business model innovation.

4. Method

In an exploratory attempt to address this research gap, we employed different methodological techniques, following the recommendations of Creswell [52]. First, we carried an extensive literature review, which was followed by focus groups with industry representatives. **The purpose of this research was to propose a set of dimensions to differentiate between product, service, and business model innovation.** These initial dimensions are proposed as a basis for identifying a mutually exclusive and collectively exhaustive differentiation dimensions, deducting the key variable of these dimensions, and investigating the threshold values.

For the literature review, we employed a structured approach, following the recommendations by Webster and Watson [53]. As illustrated in Figure 2, first, we conducted an initial literature search for English articles and reviews on the Thomson Reuther Web of Science database, using the search strings, '*business model AND product AND service AND innovation*' and '*product AND service AND innovation*' in 'Title'. From the resulting 66 publications, we scanned the abstracts for relevance to select the initial sample of eleven papers. This initial sample

subsequently formed the basis for cross-reference snowballing. The snowballing started with scanning the publication for references of relevant content and paper titles in the list of references. The abstracts of the identified publications were subsequently scanned for relevance for inclusion into or exclusion from the literature sample. Finally, the resulting sample of 34 papers was analysed in depth to identify dimensions to differentiate product, service, and business model innovation.

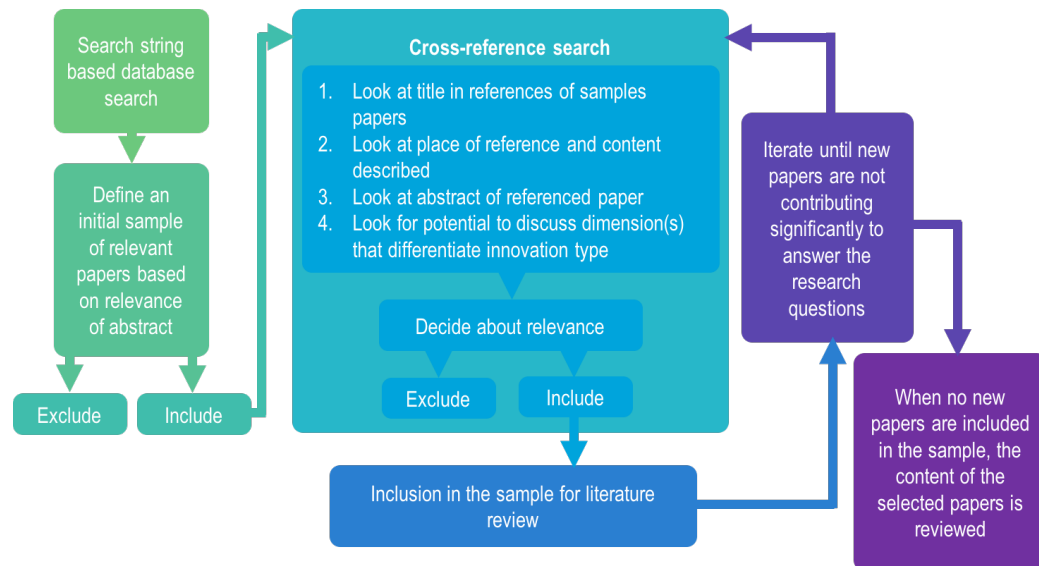


Fig. 2. Literature review approach, illustration adapted from [54]

Based on the results, two exploratory focus groups were conducted with 10 experts from an oil multinational, a consulting company, a major airplane manufacturer, and a defence multinational. The focus groups were held in two sessions on two different days with five participants in each session. Following Easterby-Smith et al. [55], we conducted the sessions as “guided conversations among a group of individuals” (p.136) using a topic guide to loosely structure the group interview [56]. This document covered the motivation of engaging in business model rather than product or service innovation, the different purposes for each approach and the different challenges that arise. Data was collected with field notes and full audio recordings of each session [57]. Both sources were subsequently scanned for differentiation dimensions that were used by the participants [58].

5. Potential dimensions of differentiation

In an exploratory attempt towards addressing this research gap, we employed different methodological techniques, following the recommendations of Creswell [52]. First, we carried an extensive literature review, which was followed by focus groups with industry representatives, to propose a set of dimensions to differentiate between product, service, and business model innovation. These initial dimensions are proposed as a basis for identifying a mutually exclusive and collectively exhaustive differentiation dimensions, deducting the key variable of these dimensions, and investigating the threshold values.

In the literature, two different streams provide indications of potential dimensions for differentiation between product and service and business model innovation. The first stream is based on the discussion of the differences between business model innovation and corporate strategy, like contributions by [17]–[20]. These approaches hint at a key role of process ownership and organizational level of coordination. This stream conceptualises the business model innovation process as a complement or even a substitute for other strategy processes, which means it is owned and coordinated at a strategic or top management level rather than, for example, the functional or project

management level. Furthermore, as illustrated in Figure 3, it is more complex and has higher strategic importance than product and service innovations [59].

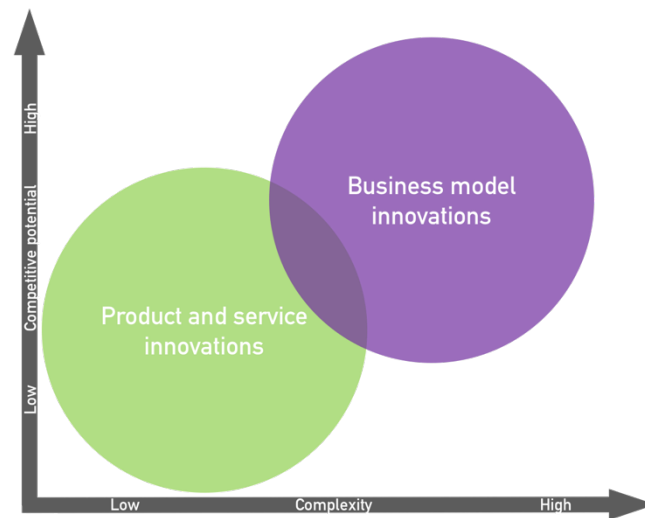


Figure 3. Comparison of competitive potential and complexity

The second stream is based on the diversification literature. Analogous to traditional approaches, like the Ansoff Matrix [60], the difference between different kinds of diversification is the source of diversification. The source for horizontal diversification, which comprises product and service innovation, is the integration of new products or services into the portfolio and the engagement in new value generation and capture configurations for business model diversification [51].

The focus group participants reiterated these dimensions and added a range of additional differentiation dimensions, as illustrated in Figure 4. The named differentiation dimensions comprise strategic importance, with risk, impact and uncertainty being key underlying considerations. The participants also stated that business model innovations tend to be more complex than the introduction of new products or services in isolation. They also saw accountability and ownership as important criteria, with a stronger involvement of the top management team and upper echelons of the organization in business model rather than product or service innovation. The participants also perceived a higher risk that organisations abandon the process and dissolve their business model innovation team after a small number of failures, while an established R&D department would not face similar consequences in response to a series of erratic product or service developments. The focus groups also assumed a higher number of stakeholders involved in the process and the requirement of a broader set of skills and capabilities, which in turn might involve a broader range of different professional disciplines. A final dimension that was named by the participants is the retention of customers. Changes in the customer base were perceived as more likely and the retention of the entire customer base less desirable for business model compared to product innovations.

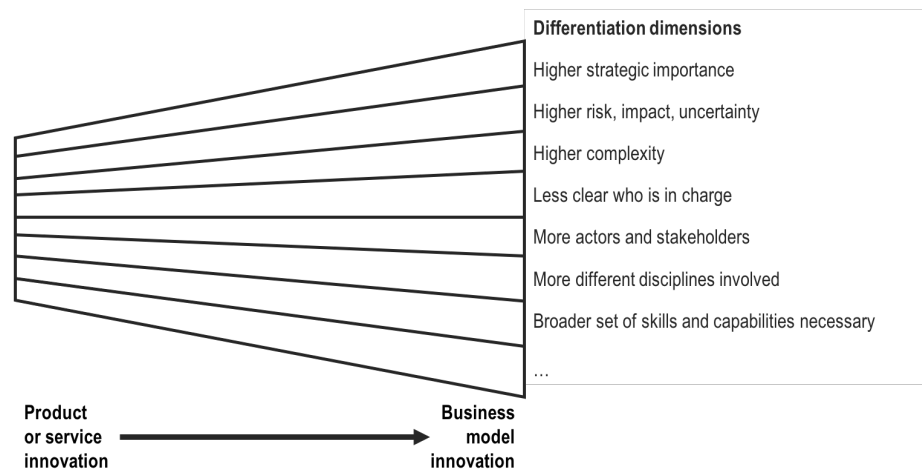


Figure 4: Differentiation dimensions identified by the focus groups

6. Discussion and conclusion

To address the conceptual ambiguity in the differentiation between product, service, and business model innovation, this paper presents an initial discussion on the dimensions, variables, and thresholds necessary to differentiate the concepts from one another. To do so, a first set of differentiation dimensions was identified by conducting an exploratory literature review and two focus groups.

Future research is necessary to 1) validate the dimensions: the presented study is only exploratory and the validation of the identified findings in a more robust setting with in-depth interviews across a range of cases in different industries and organizational contexts would be desirable [61]. Furthermore, 2) the comprehensiveness of the cases should be verified: by conducting additional focus groups, interviews, and surveys, additional differentiation dimensions could be identified [55]. Additionally, 3) research into the thresholds is needed: it would be helpful to investigate the range in which the identified variables constitute a business model innovation, a product innovation or a service innovation. Finally, 4) we suggest investigations into adjacent areas like supply chain and value network management, since these fields pose similar challenges to the conceptual boundaries of business model innovation.

Increased conceptual clarity would have theoretical and practical implications. On the one hand, it would provide a more solid basis for the growing research on business model innovation. A clear differentiation of the business model concept with adjacent notions would facilitate to define the subject under investigation and the applicability of the findings. On the other hand, it could improve organizational decision-making on sustainable business model innovation. Clearer conceptual boundaries would facilitate the identification and evaluation of the available options, which can lead to better strategic choices. This can improve firm performance and facilitate the industrial implementation of more sustainable solutions.

References

- [1] IPCC, *Climate Change 2014: Synthesis Report*. Geneva: Intergovernmental Panel on Climate Change, 2015.
- [2] B. Cardinale, J. Duffy, A. Gonzalez, and D. Hooper, "Biodiversity loss and its impact on humanity," *Nature*, 2012.
- [3] J. M. Allwood, J. M. Cullen, and M. A. Carruth, *Sustainable materials: With both eyes open*. Cambridge: UIT Cambridge Ltd, 2012.
- [4] World Bank, *Atlas of Sustainable Development Goals*. Washington: International Bank for Reconstruction and Development, 2017.
- [5] T. Piketty and E. Saez, "Inequality in the long run," *Science (80-.)*, vol. 344, no. 6186, pp. 838–43, 2014.
- [6] F. D. Blau and C. Mackie, Eds., *The Economic and Fiscal Consequences of Immigration: A Report of The National Academies of Sciences, Engineering, Medicine*. Washington: The National Academic Press, 2016.

- [7] M. E. Porter and M. R. Kramer, “Creating shared value,” *Harv. Bus. Rev.*, vol. 89, no. 1/2, pp. 62–77, 2011.
- [8] M. Geissdoerfer, D. Vladimirova, and S. Evans, “Sustainable Business Model Innovation: Review and Research Agenda,” *J. Clean. Prod.*, no. under review, 2017.
- [9] ResCoM, “ResCoM - Resource Conservative Manufacturing - Helping Manufacturers To Capture Value By Closing The Loop,” 2016. [Online]. Available: <http://www.rescoms.eu/>. [Accessed: 25-Mar-2016].
- [10] D. Klang, M. Wallnöfer, and F. Hacklin, “The Business Model Paradox: A Systematic Review and Exploration of Antecedents,” *Int. J. Manag. Rev.*, vol. 16, no. 4, pp. 454–478, Oct. 2014.
- [11] C. Zott, R. Amit, and L. Massa, “The business model: recent developments and future research,” *J. Manage.*, vol. 37, no. 4, pp. 1019–1042, 2011.
- [12] B. W. Wirtz, A. Pistoia, S. Ullrich, and V. Göttel, “Business Models: Origin, Development and Future Research Perspectives,” *Long Range Plann.*, vol. 49, no. 1, pp. 36–54, 2016.
- [13] O. D. Doleski, *Integrated Business Model: Applying the St. Gallen Management Concept to Business Models*. Berlin, Heidelberg: Springer, 2015.
- [14] J. Magretta, “Why Business Models Matter,” *Harv. Bus. Rev.*, vol. 80, no. 5, pp. 86–92, 2002.
- [15] H. Chesbrough, “Business model innovation: it’s not just about technology anymore,” *Strateg. Leadersh.*, vol. 35, no. 6, pp. 12–17, 2007.
- [16] Z. Lindgardt and M. Reeves, *Business Model Innovation*. Boston: Boston Consulting Group, 2009.
- [17] J. Richardson, “The business model: an integrative framework for strategy execution,” *Strateg. Chang.*, vol. 17, no. 5–6, pp. 133–144, 2008.
- [18] D. Teece, “Business models, business strategy and innovation,” *Long Range Plann.*, 2010.
- [19] R. Casadesus-Masanell and J. E. Ricart, “From strategy to business models and onto tactics,” *Long Range Plann.*, vol. 43, no. 2–3, pp. 195–215, 2010.
- [20] C. Zott and R. Amit, “The fit between product market strategy and business model: implications for firm performance,” *Strateg. Manag. J.*, vol. 29, pp. 1–26, 2008.
- [21] M. Garetti and M. Taisch, “Sustainable manufacturing: trends and research challenges,” *Prod. Plan. Control*, vol. 23, no. 2–3, pp. 83–104, Feb. 2012.
- [22] S. Schaltegger, E. Hansen, and F. Lüdeke-Freund, “Business Cases for Sustainability and the Role of Business Model Innovation,” *Int. J. Innov. Sustain. Dev.*, vol. 6, no. 2, pp. 95–119, 2012.
- [23] W. Stubbs and C. Cocklin, “Conceptualizing a Sustainability Business Model,” *Organ. Environ.*, vol. 21, no. 2, pp. 103–127, 2008.
- [24] P. E. Wells, *Business models for sustainability*. Cheltenham: Edward Elgar, 2013.
- [25] T. Donaldson and L. Preston, “The stakeholder theory of the corporation: Concepts, evidence, and implications,” *Acad. Manag. Rev.*, 1995.
- [26] R. Freeman, *Strategic management: A stakeholder approach*. Boston: Pitman, 1984.
- [27] J. Post, L. Preston, and S. Sauter-Sachs, *Redefining the corporation: Stakeholder management and organizational wealth*. Palo Alto: Stanford University Press, 2002.
- [28] S. Evans, P. Rana, and S. W. Short, “Final set of tools and methods that enable analysis of future oriented, novel, sustainable, value adding business models and value-networks,” 2014.
- [29] N. M. P. Bocken, S. Short, P. Rana, and S. Evans, “A value mapping tool for sustainable business modelling,” *Corp. Gov. Int. J. Bus. Soc.*, vol. 13, no. 5, pp. 482–497, Oct. 2013.
- [30] G. (Gerhard) Pahl and W. Beitz, *Konstruktionslehre : Handbuch für Studium und Praxis*. Springer, 1977.
- [31] E. E. Scheuing and E. M. Johnson, “A Proposed Model for New Service Development,” *J. Serv. Mark.*, vol. 3, no. 2, pp. 25–34, Feb. 1989.
- [32] I. Goulding, “New Product Development: A Literature Review,” *Eur. J. Mark.*, vol. 17, no. 3, pp. 3–30, Mar. 1983.
- [33] R. G. Cooper and S. J. Edgett, “Maximizing Productivity in Product Innovation,” *Res. Manag.*, vol. 51, no. 2, pp. 47–58, 2008.
- [34] Booz, Allen, and Hamilton, *New product development for the 1980s*. New York, 1982.
- [35] A. Johne and C. Storey, “New service development: a review of the literature and annotated bibliography,” *Eur. J. Mark. Manag.*, vol. 32, no. 3/4, pp. 184–251, 1998.
- [36] I. Alam and C. Perry, “A customer-oriented new service development process,” *J. Serv. Mark.*, vol. 16, no. 6, pp. 515–534, Nov. 2002.
- [37] E. P. Antonacopoulou and E. Konstantinou, “The New Service Model: a review, a critique and a way forward,” *Serv. Ind. J.*, vol. 28, no. 6, pp. 845–860, 2008.
- [38] D. Kelly and C. Storey, “New service development: initiation strategies,” *Int. J. Serv. Ind. Manag.*, vol. 11, no. 1, pp. 45–63, Mar. 2000.
- [39] C. R. Martin, D. A. Horne, and A. M. Schultz, “The business-to-business customer in the service innovation process,” *Eur. J. Innov. Manag.*, vol. 2, no. 2, pp. 55–62, Aug. 1999.
- [40] H. Perks and N. Riihela, “An exploration of inter-functional integration in the new service development process,” *Serv. Ind. J.*, vol. 24, no. 6,

- pp. 37–63, Nov. 2004.
- [41] F. Ian Stuart and S. S. Tax, “Planning for service quality: an integrative approach,” *Int. J. Serv. Ind. Manag.*, vol. 7, no. 4, pp. 58–77, Oct. 1996.
- [42] British Standards Institution, *British Standard 7000: Guide to Managing Product Design*. London: BSI.
- [43] A. Craig and S. Hart, “Where to Now in New Product Development Research?,” *Eur. J. Mark.*, vol. 26, no. 11, pp. 2–49, Nov. 1992.
- [44] F. Johne, “Success factors in product innovation: A selective review of the literature,” *J. Prod. Innov. Manag.*, vol. 5, no. 2, pp. 114–128, Jun. 1988.
- [45] G. L. Lilien and Eunsang Yoon, “Determinants of new industrial product performance: a strategic re-examination of the empirical literature,” *IEEE Trans. Eng. Manag.*, vol. 36, no. 1, pp. 3–10, 1989.
- [46] R. Rothwell, “The characteristics of successful innovators and technically progressive firms (with some comments on innovation research),” *R&D Manag.*, vol. 7, no. 3, pp. 191–206, 1977.
- [47] D. W. Mitchell and C. B. Coles, “Business model innovation breakthrough moves,” *J. Bus. Strategy*, vol. 25, no. 1, pp. 16–26, 2004.
- [48] M. Labbé and T. Mazet, “Die Geschäftsmodellinnovationen-Matrix: Geschäftsmodellinnovationen analysieren und bewerten,” *Der Betr.*, vol. 17, pp. 897–902, 2005.
- [49] A. Osterwalder and Y. Pigneur, “Clarifying Business Models,” *Commun. Assoc. Inf. Syst.*, vol. 16, no. 1, pp. 1–40, 2005.
- [50] D. Schallmo, *Geschäftsmodell-Innovation: Grundlagen, bestehende Ansätze, methodisches Vorgehen und B2B-Geschäftsmodelle*. Wiesbaden: Springer Fachmedien Wiesbaden, 2013.
- [51] P. Aversa and S. Haefflinger, “Business model portfolio management,” London, 2015.
- [52] J. W. Creswell, *Research design*, Internatio. Los Angeles, London, New Delhi, Singapore, Washington, DC: Sage, 2014.
- [53] J. Webster and R. T. Watson, “Analyzing the Past to Prepare for the Future: Writing a Literature Review,” *Source MIS Q.*, vol. 26, no. 2, 2002.
- [54] M. Geissdoerfer, P. Savaget, N. M. P. Bocken, and E. J. Hultink, “The Circular Economy – A new sustainability paradigm?,” *J. Clean. Prod.*, vol. 143, pp. 757–768, 2017.
- [55] M. Easterby-Smith, R. Thorpe, and P. Jackson, *Management and Business Research*, 5th ed. London: Sage, 2015.
- [56] D. Stokes and R. Bergin, “METHODOLOGY OR ‘METHODOLATRY’? AN EVALUATION OF FOCUS GROUPS AND DEPTH INTERVIEWS,” *Qual. Mark. Res. An Int. J.*, vol. 9, no. 2, pp. 26–36, 2006.
- [57] D. Silverman, *Doing qualitative research*, 4 th. Los Angeles, Calif.: Sage, 2013.
- [58] M. B. Miles, A. M. Huberman, and J. Saldaña, *Qualitative data analysis*, 3rd ed. Los Angeles, Calif.: Sage, 2014.
- [59] M. E. Porter, *Competitive advantage*. New York: Free Press, 2004.
- [60] I. Ansoff, “Strategies for Diversification,” *Harv. Bus. Rev.*, vol. 35, no. 5, pp. 113–124, 1957.
- [61] R. K. Yin, *Case Study Research: Design and Methods*, 5th ed. London: Sage, 2014.